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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: David William THOMSON et al.

Application No: 10/719,232

Filing Date: November 20, 2003

For: TAMPER-EVIDENT DEVICE

Confirmation No. 2204

Group Art Unit: 3727

Examiner:

Atty. Docket No.: 85170-4900

SUBMISSION OF CERTIFIED PRIORITY DOCUMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Applicants have claimed priority under 35 U.S.C. § 119 of Application No. UK 0112726.5 filed May 25, 2001 in Great Britain. In support of this claim, a certified copy of said application is submitted herewith.

No fee or certification is believed to be due for this submission. Should any fees be required, however, please charge such fees to Winston & Strawn LLP Deposit Account No. 50-1814.

Respectfully submitted,

Date: 3-5-04

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Enclosures

NY:840382.1

The Patent Office
Concept House
Cardiff Road
Newport
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Dated 31 December 2003

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1/77

25MAY01 E637209-7 000239
P01/7700 0.00-0112726.5

THE PATENT OFFICE
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25 MAY 2001
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Request for grant of a patent

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The Patent Office

Cardiff Road
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1. Your reference

DM/JD/ED/P11434GB

2. Patent application number
(The Patent Office will fill in this part)

0112726.5 25 MAY 2001

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

Daniel Montgomery & Son Limited
Old Mill Park Estate
Kirkintilloch
Glasgow G66 1ST

Patents ADP number *(if you know it)*

4029450001

If the applicant is a corporate body, give the country/state of its incorporation

Scotland, United Kingdom

4. Title of the invention

TAMPER-EVIDENT DEVICE

5. Name of your agent *(if you have one)*

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

Cruikshank & Fairweather
19 Royal Exchange Square
Glasgow G1 3AE

Patents ADP number *(if you know it)*

547002

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day / month / year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
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Yes

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Continuation sheets of this form	
Description	17
Claim(s)	
Abstract	
Drawing(s)	7 + 2

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Priority documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	
Request for preliminary examination and search *(Patents Form 9/77)*	
Request for substantive examination *(Patents Form 10/77)*	
Any other documents *(please specify)*	

11. I/We request the grant of a patent on the basis of this application.

Signature CRUIKSHANK & FAIRWEATHER Date 24 May 2001

12. Name and daytime telephone number of person to contact in the United Kingdom

Dr David Moreland
0142-221 5767

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TAMPER-EVIDENT DEVICE

FIELD OF INVENTION

The present invention relates to a tamper-evident device for a closure assembly adapted to be applied to a mouth of a container, for example, a neck of a bottle.

BACKGROUND OF INVENTION

For various reasons, it may be desirable to ensure that a used container, such as a bottle intended to contain spirits, is not re-filled with a replacement quantity of liquid, the characteristics and quality of which may differ from the original contents. Attempts to provide closures which make such re-filling difficult are not always proof against determined tampering. While it is considered advantageous to provide a tamper-indicating means which provides evidence that the bottle and its original contents are intact, if the bottle is resealable with a substitute cap or closure, there may be little to indicate to the purchaser that the bottle has been tampered with and that the contents may be inferior to the original contents.

It has, therefore, been found desirable to provide a

closure which cannot be removed without an extreme level of effort, or breakage being caused to the bottle. Such an arrangement is shown for example in GB Patent No 2 274 837 also by the present Applicant, selected merely by way of illustration.

Whilst it is very important that an original closure cannot be removed without visible damage or breakage being caused either to the closure or to the bottle, it has been found that a closure that cannot readily be removed will become the target of attempts to re-fill the container by overcoming the feature provided in the closure intended to hinder or prevent this. Therefore, in addition to providing devices to prevent re-filling of bottles, there is a need to provide such devices with further tamper-indicating features which, while not acting in any preventive role, give a clear irremovable or irreversible indication that a bottle has been opened since being originally filled with the genuine contents. Such clear indicators have been somewhat lacking in previous closure designs.

Furthermore, there is a need for simple designs of closure assemblies allowing easy and reliable manufacture, assembly and fitting to bottle necks. Such simplicity has

been somewhat lacking in previous closure designs.

It is an object of at least one aspect of the present invention to provide an improved tamper evident device which does not have any parts which are removed upon initial opening and which are liable to be reattached by counterfeiters or the like.

It is also an object of a least one aspect of the present invention to obviate or mitigate at least one of the aforementioned problems/disadvantages in the prior art.

SUMMARY OF INVENTION

According to a first aspect of the present invention, there is provided a tamper-evident device comprising a first sleeve member which comprises a first portion associated with a second portion by means of a frangible portion therebetween, and wherein said first portion is adapted to be applied to a mouth and neck portion of a container, and said second portion is associated with a container closure member, and wherein an initial container opening operation causes said frangible portion to fracture or break such that when the container is reclosed said first and second portions are located in a spaced apart relationship to one another.

Preferably the frangible portion is provided adjacent a first and second circumferential edge of each of the first and second members respectively.

Either or both of the first and second circumferential edges may retract or recoil away from each other during a container opening operation when the frangible portion fractures or breaks.

The retraction or recoil is preferably accompanied by a concomitant circumferential contraction of at least one of the first/second edges inwardly of the first/second portion to provide at least one edge having a smaller circumference than an adjacent portion of the first/second portion.

The retraction or recoil movement is important because it advantageously results in a permanent deformation of the first and/or second portions such that when the container is reclosed the first and/or second circumferential edges, do not abut together thus revealing a void or gap located between the first and second portions. This visual indicator evidences that the container has been opened.

Preferably, the container closure member includes a circumferential groove which may further provide a circumferential lip portion located below and adjacent to

the circumferential groove.

Preferably, during a container opening operation, the first circumferential edge recoils/retracts and circumferentially contracts into the circumferential groove to become positioned behind the circumferential lip. This action positions the circumferential lip between the first and second circumferential edges in an obstructive manner such that when the container is reclosed by re-applying the closure member, the first and second portions of the first sleeve member are spaced apart by the circumferential lip portion located therebetween.

The frangible portion is generally located in a circumferential groove provided between the first and second portions of the first sleeve member.

Preferably the frangible portion is located at the apex or base of the groove.

The frangible portion may be provided as a continuous weakened portion such as a circumferential scored line or alternatively the frangible portion may comprise intermittent shearable links which join the first portion to the second portion or a combination of these.

The first edge of the first portion may provide a circumferential first beaded portion and in the same manner

the second edge may provide a circumferential second beaded portion on the second portion.

The first sleeve member may comprise any suitable material and preferably this material comprises a metal.

Preferably the metal comprises aluminium, particularly rolled aluminium.

Without wishing to be bound by theory, when the first sleeve member comprises rolled aluminium, the retraction, recoil and/or contraction on breakage of the frangible portion is believed to be due to release of a tension introduced into the aluminium during application of the sleeve member to the container/container closure member.

Also, advantageously, aluminium provides a good medium for application of printing dyes, inks, paints or the like such that messages, logos, images, names, and other information may be carried by the sleeve member.

The container closure member may be a cap which desirably includes a threaded portion which allows a rotational movement of the cap during a container opening operation.

The container is preferably a bottle.

The tamper-evident device may include a pouring outlet device adapted to be secured to the mouth of a container

for liquid wherein the container closure member is a cap adapted to close the outlet of the pouring outlet device and wherein the first sleeve member is adapted to receive at least part of the pouring outlet device.

Preferably the second portion of the first sleeve member is adapted to receive at least part of the cap.

The cap is generally received in a tight interference fit but may be rotatable with respect to the second portion of the first sleeve member.

The pouring outlet device is desirably a non-refillable and/or a non-removable device.

Desirably the pouring device comprises a second sleeve member which is adapted to lie around the mouth and neck portion of the container and further comprises a valve seat body which is at least partially receivable within at least part of the neck portion of the container and wherein the valve seat body is at least partially surrounded by the second sleeve member.

The first sleeve member is preferably adapted to receive at least part of the second sleeve member, preferably in a tight interference fit but rotatable with respect to the second sleeve member.

Preferably the circumferential groove of the first

sleeve member is located within a circumferential groove provided on the cap. This positioning ensures that when the container is opened by twisting the cap, and fracturing or breaking the shearable links, the second edge of the second portion of the first sleeve member remains within the groove provided on the cap, and the first edge of the first portion of the first sleeve member progressively moves out of the groove provided on the cap as the cap is removed away from the pouring outlet device and the first portion. On removing the contact between the cap and the first portion of the first sleeve member, the first edge retracts to cause a contraction of circumference such that the resulting circumference is less than that of the cap portion which is located below the groove therein. This cap portion is preferably provided as a circumferential lip on the cap.

When the cap is re-applied to the pouring outlet device, a stop position is reached when the circumferential lip of the cap rests or sits upon the first edge of the first portion of the first sleeve, thus preventing the cap being returned to its original starting position. A gap or void remains between the first and second portions of the first sleeve member thus exposing the circumferential

portion of the cap, which includes the circumferential lip which was originally encased within the first sleeve member. A void also exists between the lower edge of the cap and a cap seating surface of the pouring device.

Advantageously the exposed portion of the cap may be distinctly coloured and/or printed with information, promotional messages or the like.

According to a second aspect of the present invention, there is provided a container including a tamper-evident device as herein before described.

The container is preferably a container for liquid which further includes a pouring outlet device as herein before described.

The present invention will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 is a partially cut away side view of a tamper-evident device, according to an embodiment of the first aspect of the present invention in combination with a pouring outlet device and bottle neck shown in phantom lines.

Figure 1a is an enlarged view of the circled cut-away view of Figure 1.

Figure 2 is a partially cut-away side view of the tamper-evident device shown in Figure 1 in use with the closure member removed.

Figure 3 is a partially cut-away side view of the tamper-evident device shown in Figure 2 with the closure member re-applied.

Figure 3a is an enlarged portion of the cut-away view of Figure 3.

Figure 4 is a partially cut-away side view of a tamper-evident device according to another embodiment of the first aspect of the present invention in combination with a pouring outlet device and bottle neck shown in phantom lines.

Figure 4a is an enlarged view of the circled cut-away view of Figure 4.

Figure 5 is a partially cut-away view of the tamper-evident device shown in Figure 4 in use with the closure member removed.

Figure 6 is a partially cut-away side view of the tamper-evident device shown in Figure 5 with the closure member re-applied.

Figure 6a is an enlarged view of the circled cut-away view of Figure 6.

Figure 7 is an exploded perspective view of a tamper-evident device in combination with a pouring outlet device and a bottle mouth and neck.

With reference to Figure 1, there is shown a tamper-evident device generally designated 1 which comprises a first sleeve member 5 which comprises a first portion 10 associated with a second portion 15 by means of a frangible portion 20 therebetween. The first portion 10 is adapted to receive second sleeve member 30 which is part of the pouring outlet device 25 which in this embodiment is a non-refillable and non-removable device. The lower section of the second sleeve member 30 fits within the first portion 10 in a tight interference fit but rotatable with respect to the first portion 10.

The second portion 15 is associated with a container closure member shown as cap 35 which is received within the second portion 15 in a tight interference fit but rotatable with respect to the second portion 15.

With reference to Figure 1a, the first portion 10 of the first sleeve member 5 is shown associated with the second portion 15 of the first sleeve member 5 by means of the frangible portion 20. Portions 10 and 15 are in a close interference fit with second sleeve 30 and cap 35

respectively.

The frangible portion is located within groove 40 which is provided between the first and second portions 10, 15. Groove 40 is shown located within groove 60 provided on cap 35. Also shown is a threaded portion 45 on cap 35 which engages with a corresponding threaded portion 50 provided on second sleeve member 30.

In use cap 35 is rotated in an initial container opening operation which causes the frangible portion 20 to break as described below.

Referring to figure 2, the cap 35 and second portion 15 associated therewith is shown in a removed position away from the pouring device 25 which clearly shows the first portion 10 still associated with the second sleeve 30.

Referring to figure 3, cap 35 and second portion 15 associated therewith is shown re-applied to pouring outlet 25 and the first and second portions 10, 15 respectively are clearly shown in a spaced apart relationship to one another due to the appearance of gap 55.

Referring to Figure 3a, there is shown groove 60 provided on cap 35 and the second edge 80 of the second portion remaining within groove 60. First edge 75 of first portion 10 is shown in a contracted circumferential

state having moved out of groove 60 upon removal of cap 35 from pouring outlet device 25. The cap portion which is located below groove 60, shown as lip 65, rests upon the first edge 75 resulting in a void 70 which remains between the lower edge 85 of cap 35 and the cap seating surface 90 of second sleeve member 30. Lip 75 is clearly visible to an observer because it is positioned in gap 55 between the first and second portions 10 and 15.

In this embodiment the first sleeve member 5 is made from rolled aluminium and the frangible portion 20 is formed from nine shearable links (not shown) which shear on twisting cap 35 and associated second portion 15 away from the pouring outlet device 25 and associated first portion 10. Furthermore the aluminium sleeve 5 may be coated with inks or paint or the like and may be further provided with printed matter and advantageously good reproducibility of colours is obtained when using coloured printed matter.

Referring now to Figure 4, there is shown a tamper-evident device generally designated 100 according to another embodiment of the first aspect of the present invention.

Device 100 comprises a first sleeve member 105 having a first portion 110 and a second portion 115 associated by

means of frangible portion 120.

Figure 4a clearly shows a first beaded portion 130 provided on the first portion 110 and a second beaded portion 135 provided on the second portion 115.

Referring to Figure 5, in the same manner as described hereinbefore, cap 35 and associated second portion 115 may be removed by twisting away from the pouring outlet device 25 and first portion 110 associated therewith.

Referring to Figure 6, cap 35 and second portion 115 have been reapplied to the pouring outlet device 25 and a gap 140 remains between the first and second portions 110 and 115.

Referring now to Figure 6a in the same manner as hereinbefore described, edge 150 remains in groove 60 of cap 35 and lip 65 rests upon edge 145 of the first beaded portion 130 of the first portion 110, resulting in void 155 formed between lower edge 85 of cap 35 and the cap seating surface 90.

Referring now to Figure 7, this shows an exploded perspective view of a tamper-evident device 1 in association with a cap 35, pouring outlet device 25 and a bottle mouth and neck portion 3.

The pouring outlet device 25 consists of a second

sleeve member 30 having apertures 27a, 27b and 27c (27c not shown) with projection means 33a, 33b and 33c (33c not shown) located on the lower edges of the apertures 27a, 27b and 27c respectively. The second sleeve member 30 further has a pouring lip 34, inner surface ribs 37 and a thread portion 50.

The projection means 33a, 33b and 33c are movable radially of the second sleeve member 30 in a stiffly resilient manner and are resiliently engagable with an outer lip portion of the container which in this embodiment is shown as shoulder 4 of the bottle neck 3.

In this embodiment twenty-four ribs 37 are formed and arranged circumferentially on an inner surface of the second sleeve member 30. These ribs 37, in use when the pouring outlet device 25 is applied to a bottle neck, co-act with raised ridges (not shown) on the outer surface of the bottle neck 3 to help prevent undesired rotational movement of the second sleeve member 30. Some minor rotation in either a clockwise or anticlockwise direction may occur until a stop position is found by a rib or ribs 37 acting against a raised ridge or ridges.

A valve seat body 42 and a valve member 44 are also shown. The tubular portion 43 of the valve seat body is

adapted to be received within the mouth portion 3 of the bottle.

The first portion 10 and second portion 15 of the first sleeve member 5 are attached by a frangible portion 20 which breaks and allows the cap 35 to be removed with the second portion 15 when it is twisted away from the pouring outlet device 25 by a user in an opening operation. The first sleeve member 5, cap 35 and the pouring outlet device 25 may be conveniently assembled to give a single unit ready for simple application to a bottle neck thus enhancing the efficiency of the manufacture and assembly process.

Typically, the bottle is made from glass or alternatively a plastics material, the first sleeve member 5 from aluminium, the cap 35 from low density polyethylene, the second sleeve member 30 from a stiffly resilient plastics material such as polypropylene or polystyrene and which in this embodiment is a polystyrene obtainable under the trade name, Styrolux, the valve member 44 from crystal polystyrene and the valve seat body 42 from low density polyethylene.

A non-return valve is formed from the valve seat body 42 and valve member 44 which is closed in a normally

upright position of the bottle, which while allowing liquids to flow from the bottle in a pouring operation, restricts in-flow of liquid into the bottle by simple unauthorised filling operations or even more sophisticated methods which may involve insertion of objects, tubes or the like into the bottle mouth.

It is understood that modifications may be made to the embodiment as herein described without departing from the scope of the present invention, for example, the sleeve member 5, 105 may be applied to various different designs of pouring device adapted to be applied to a variety of containers including bottles.

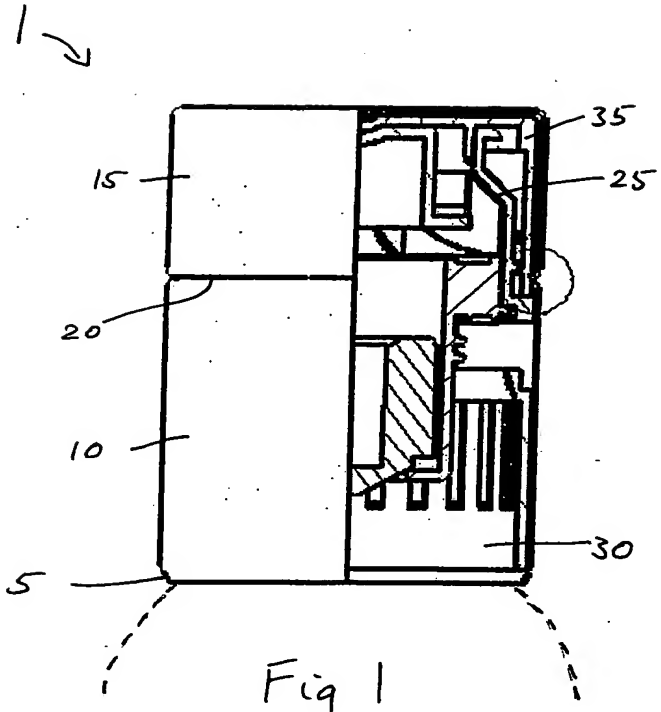

Fig 1

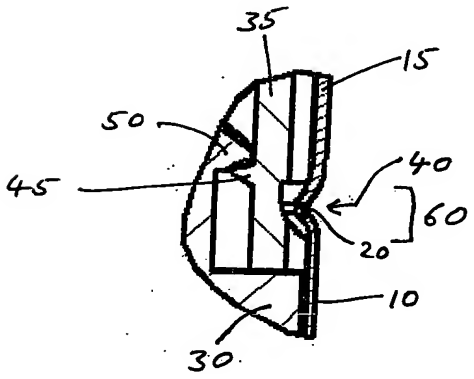

Fig 1a

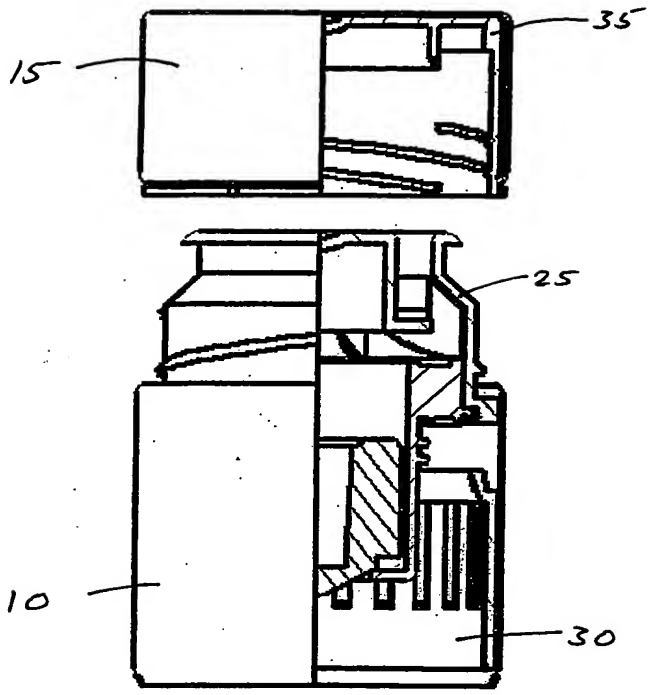

Fig 2

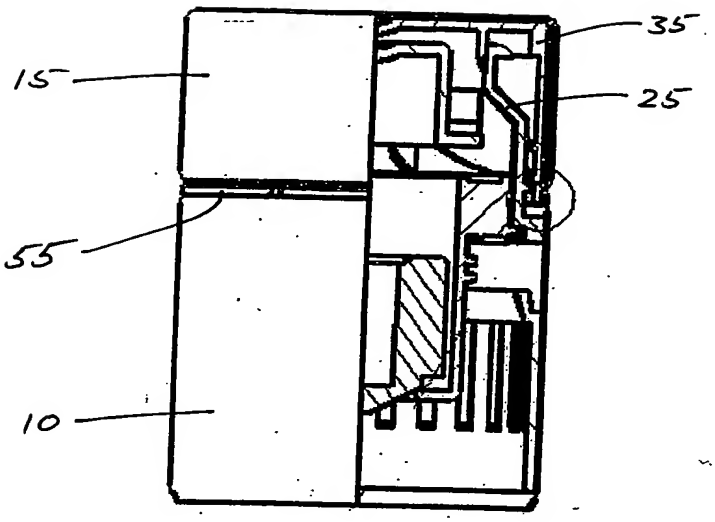

Fig 3

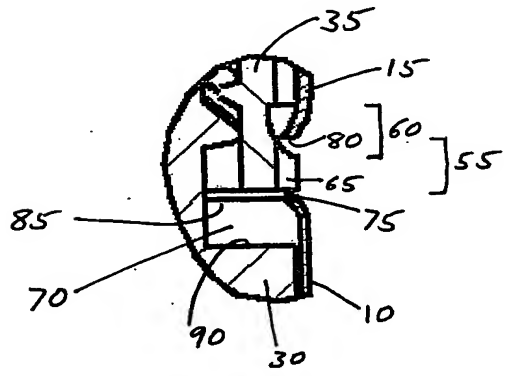

Fig 3a

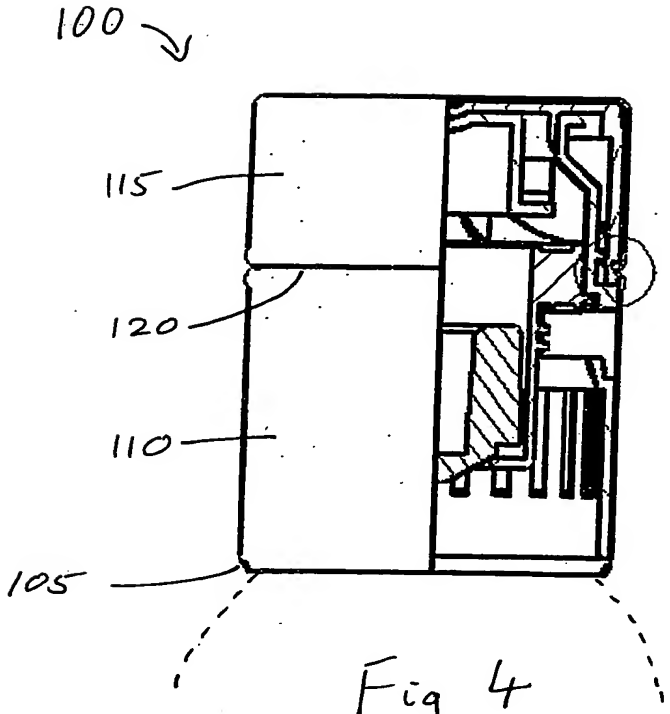

Fig 4

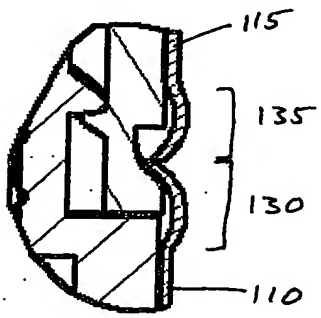

Fig 4a

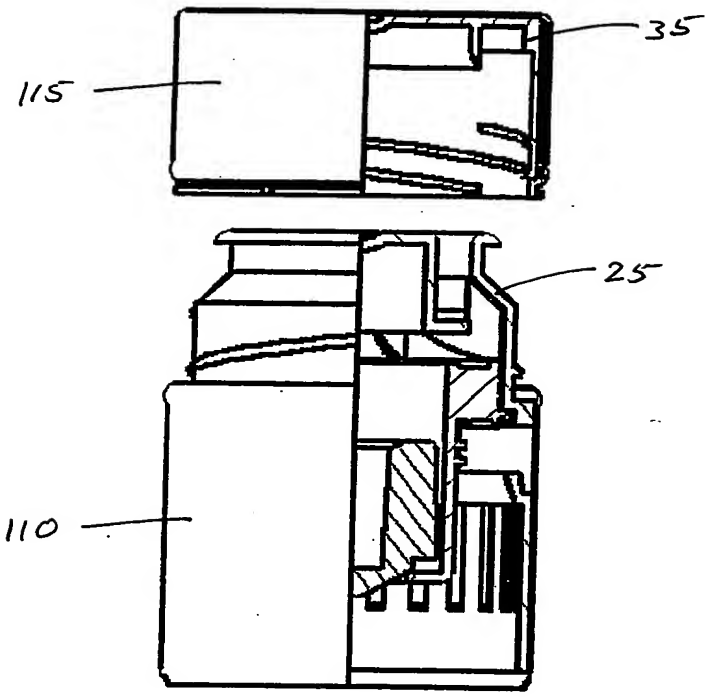

Fig 5

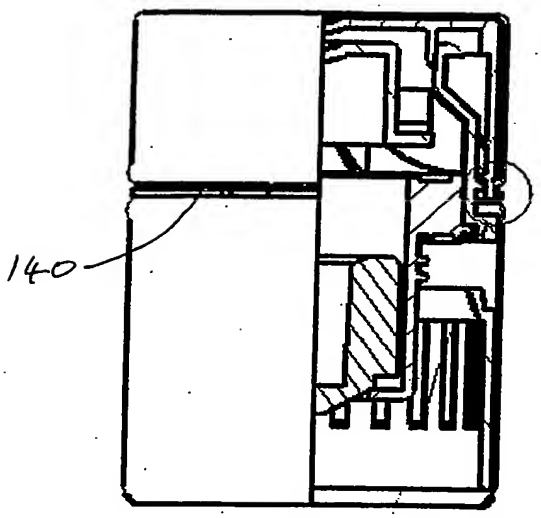

Fig 6

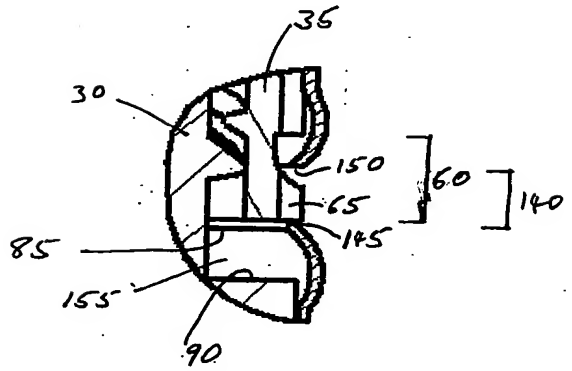

Fig 6a

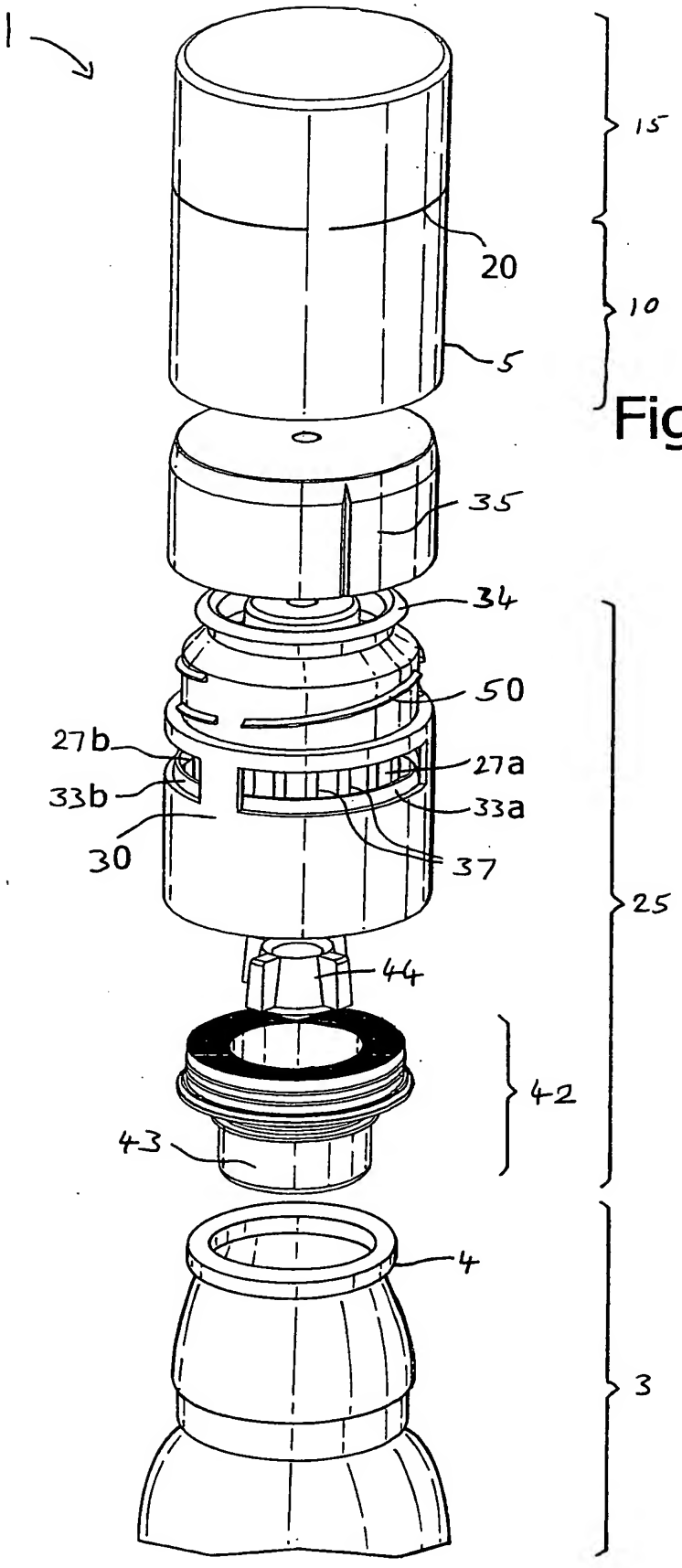

Fig. 7